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ART UNIT	**PAPER NUMBER**
1733	13

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/600,831	Applicant(s) DAVEY, TERENCE JAMES	
	Examiner Gladys J Piazza Corcoran	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-7,11,13,16 and 19-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-7,11,13,16 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The Amendment filed July 2, 2002, paper number 9, to the Specification for page 10, fourth paragraph, line 2 recites, "however the method **os** more." It is suggested to amend to –**is**--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3, 5-7, 11, 13, 16, 20, 21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims **1, 3, 5, 6** recite "removing gas and unreacted chemicals in a vapor state from fibre/resin layers." Claim **20** recites, "unreacted chemicals in fibre/resin layers of the hull can be extracted in a vapor state." The Specification does not disclose removing unreacted chemicals in a vapor state from the product. The Specification only discloses on page 5, lines 10-15 that "gaseous reaction products are drawn off." It is suggested to amend the claims to recite language as disclosed in the Specification.

Claim 11, recites, "a glassfibre product having a surface that is devoid of gelcoat material." The specification discloses on page 3, lines 19-21, removing part of the gelcoat material from the affected areas of the product, however the specification does not disclose a product that is devoid of gelcoat material.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 6, 11, 16, 20, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Browning et al. (US Patent No. 4,016,022).

Browning discloses a method of treating the surface of a glass fibre product (column 2, lines 60-65) by positioning a layer of gas permeable material (porous glass reinforced Teflon coated fabric or a breather cloth) in contact with a portion of a surface of the product, positioning a layer of impermeable material (nylon film vacuum bag) in a manner such that a space exists between at least a portion of the impermeable material and the surface with the gas permeable material in the space (column 3, lines 15-30), applying heat within the space (column 3, lines 30-39), and removing gas and unreacted chemical vapors from the fibre/resin layers of the product by creating a partial

vacuum within the space in a manner that the vacuum is in communication with all of the portion of the surface of the product that is in contact with the layer of gas permeable material, with the partial vacuum having a pressure between 2 and 5 mb Abs (column 3, lines 30-43). As to claim 5, the step of partial vacuum occurs prior to the step of applying heat (column 3, lines 30-39). As to claim 6, the partial vacuum is maintained for at least an hour (column 3, lines 30-39).

As to claim 11, Browning discloses a layer of gas permeable material (porous glass reinforced Teflon coated fabric or a breather cloth), a gas impermeable material (nylon film vacuum bag), and a heater (oven) (column 3, lines 15-43). As to the glass fibre product having a surface that is devoid of gel coat material and a partial vacuum within the space, the material worked upon does not limit apparatus claims (see MPEP 2115). It is noted however, that Browning discloses a glass fibre product devoid of gel coat material (column 2, lines 60-65) and a partial vacuum within the space as claimed (column 3, line 30-35). As to claim 16, Browning discloses the impermeable material with a peripheral surface which is fully capable of being secured solely by a pressure differential. As to claim 20, the apparatus in Browning further has a means for securing the impermeable material layer around the periphery (column 3, lines 25-28) and means for reducing pressure within the space (column 3, lines 30-32) which is fully capable of treating a glass fibre reinforced boat hull. As to claim 21, the gas permeable material, and the impermeable material are flexible to be compatible with different contours (column 3, lines 15-43).

6. Claims 11, 13, 16, 20, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Hale (US Patent No. 6,017,484).

Hale discloses a layer of gas permeable material (release film 29, breather material 26), a gas impermeable material (vacuum bag 30), and a heater (oven, heaters 18, 19) (column 4, line 53 to column 6, line 43). As to the glass fibre product having a surface that is devoid of gel coat material and a partial vacuum within the space, the material worked upon does not limit apparatus claims (see MPEP 2115). It is noted however, that Hale discloses a partial vacuum within the space as claimed (column 8, line 38-46). As to claim 13, Hale discloses a thermostat connected to the heater and the space (column 5, lines 53-56). As to claim 16, Hale discloses the impermeable material with a peripheral surface which is fully capable of being secured solely by a pressure differential. As to claim 20, the apparatus in Hale further has a means for securing the impermeable material layer around the periphery (column 5, lines 3-5; column 6, lines 34-35; column 7, lines 20-21) and means for reducing pressure within the space (column 8, lines 38-46) which is fully capable of treating a glass fibre reinforced boat hull (column 14, lines 13-16). As to claim 21, the gas permeable material, and the impermeable material are flexible to be compatible with different contours.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scola (US Patent No. 4,007,245) as taken with Hale (US Patent No. 6,017,484).

Scola discloses it is known in the composite art to strengthen and repair fiber/resin composite materials, particularly of glass fiber (column 1, lines 15-26), after degradation caused by water and other polar compounds (column 2, lines 20-30) by treating the composite by a method of heating in a vacuum system in order to improve the shear strength of the composite article (column 1-11; column 8, lines 29-34). Scola discloses an approximate example of the level of vacuum to be about 1 mm of Hg which is a greater amount of vacuum than the range as claimed. This is an approximate value for the level vacuum in order to achieve the maximum amount of strengthening in the composite part (column 8, lines 14-23). However, it is well within the purview of one of ordinary skill in the art to select appropriate vacuum levels, such as the claimed range, for providing the amount of strengthening desired and for the particular composite materials being worked upon. One of ordinary skill in the art would find the appropriate levels by routine experimentation according to the strengthening required and the minimum amount of costs for providing the particular levels of vacuum for the particular materials worked upon, only the expected results would be attained.

Scola discloses that the method is practiced by applying heat and vacuum but does not specifically recite the particulars of the apparatus used to apply the heat and vacuum. It is known in the composite art, as exemplified by Hale, to apply heat and vacuum to composite parts by positioning a layer of gas permeable material (release

film 29, breather material 26) in contact with a portion of the exterior surface of the part, positioning a layer of impermeable material (vacuum bag 30) with the gas permeable material in a space between the part and the impermeable material, applying heat to the space (oven, heaters 18, 19), and removing gas and vapor in the space with a vacuum in the range as claimed (column 4, line 53 to column 6, line 43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of treating a composite as shown by Scola by using a well known tool in order to apply the heat and vacuum as exemplified by Hale for repairs of composite parts.

As to claim 5, Scola does not appear to specifically recite whether the vacuum commences prior to heating, however it is well known in the art to apply the vacuum prior to applying heat to composite parts when treating with heat and vacuum, for example, Hale discloses such order of steps (column 4, line 53 to column 6, line 43). As to claim 6, the vacuum in Scola is maintained for at least an hour (column 2, lines 21-30.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scola in view of Hale as applied to claim 1 above, and further in view of Wuepper et al. (US Patent No. 5,023,987).

Hale discloses the impermeable layer's periphery is sealed to the product with a vacuum bag sealant (vacuum bag; column 5, lines 3-5). It is not clear if this is a tape however it is well known in the art to use an adhesive tape as a functionally equivalent to sealant in order to seal the periphery of vacuum bags. For example, Wuepper discloses a method of treating a surface where the layer of impermeable material

(vacuum bag 130) is secured to the surface with a sealing tape around its periphery (column 5, lines 9-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method as shown in Scola and Hale by securing the impermeable layer with an adhesive tape as exemplified by Wuepper since it is a well known functionally equivalent alternative to providing sealant in order to seal the layer.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scola and Hale as applied to claim 1 above, and further in view of Wengler et al. (US Patent No. 4,352,707) and/or Mahon et al. (US Patent No. 3,837,965).

Hale discloses the impermeable layer's periphery is sealed to the product with a vacuum bag sealant (vacuum bag; column 5, lines 3-5). However it is well known in the art to provide such structures in such a way to be adapted to form an air tight seal by the vacuum. For example, Wengler (column 3, lines 39-41) and/or Mahon (column 3, lines 1-3) both disclose examples of vacuum means where the impermeable material sheet forms an airtight seal via the partial vacuum that is applied. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of treating a surface as shown in Scola and Hale by securing the layer of impermeable material to the surface via the partial vacuum that is applied as is well known in the art as a equivalent alternative to sealant and further exemplified by Wengler and Mahon in order to seal the layer.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scola and Hale as applied to claim 1 above, and optionally further in view of McBroom (EP 0839635).

Scola discloses that the product is a composite molding of glass fiber and polyester resin (column 8, lines 35-45, 64-68) and the temperature and vacuum are maintained on the composite part for at least an hour (column 2, lines 21-30). Scola discloses an approximate exemplary temperature to heat the part for maximum strengthening as 300° F (column 8, lines 14-23). However, it is well within the purview of one of ordinary skill in the art to select appropriate Temperature levels, such as the claimed range, for providing the amount of strengthening desired and for the particular composite materials (fiber and resin) being worked upon. One of ordinary skill in the art would find the appropriate levels by routine experimentation according to the strengthening required, the minimum amount of costs for providing the particular levels of temperature for the particular materials worked upon, and the appropriate temperatures for the particular properties of the particular materials, only the expected results would be attained. Optionally, it is known in the composite repair art, as exemplified by McBroom to maintain the temperature substantially below 100°C in order to avoid steaming of any water present (column 4, lines 25-36). McBroom practices this by applying the heat at a temperature of approximately 90°C (column 8, lines 48-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of treating a composite with heat and vacuum as shown in Scola and Hale by maintaining the temperature below 90°C as would have been well within

the purview of one of ordinary skill in the art and optionally since it is known to provide such Temperature limits in order to prevent steaming as shown by McBroom.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Browning et al. as applied to claim 1 above, and further in view of Wuepper et al. (US Patent No. 5,023,987).

Browning discloses the impermeable layer's periphery is sealed to the product with a vacuum bag sealant (vacuum bag; column 3, lines 25-30). It is not clear if this is a tape however it is well known in the art to use an adhesive tape as a functionally equivalent to sealant in order to seal the periphery of vacuum bags. For example, Wuepper discloses a method of treating a surface where the layer of impermeable material (vacuum bag 130) is secured to the surface with a sealing tape around its periphery (column 5, lines 9-11). It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method as shown in Browning by securing the impermeable layer with an adhesive tape as exemplified by Wuepper since it is a well known functionally equivalent alternative to providing sealant in order to seal the layer.

13. Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Browning et al. as applied to claims 1 and 11 above, and further in view of Wengler et al. (US Patent No. 4,352,707) and/or Mahon et al. (US Patent No. 3,837,965).

Browning discloses the impermeable layer's periphery is sealed to the product with a vacuum bag sealant (vacuum bag; column 3, lines 25-30). However it is well known in the art to provide such structures in such a way to be adapted to form an air

tight seal by the vacuum. For example, Wengler (column 3, lines 39-41) and/or Mahon (column 3, lines 1-3) both disclose examples of vacuum means where the impermeable material sheet forms an airtight seal via the partial vacuum that is applied. It would have been obvious to one of ordinary skill in the art at the time of the invention to perform the method of treating a surface as shown in Browning by securing the layer of impermeable material to the surface via the partial vacuum that is applied as is well known in the art as a equivalent alternative to sealant and further exemplified by Wengler and Mahon in order to seal the layer.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Browning et al. as applied to claim 11 above, and further in view of Leobon (FR 2693147).

Browning discloses maintaining the product at a particular temperature during treatment (column 3, lines 30-43). It is well known in the art of treating composite materials to use a thermostat in order to control the temperature of the heat applied with the heater. Leobon discloses an example of treating a composite product where a thermostat is provided in order to control the temperature of the heat applied to the surface (temperature probe 32, control center 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the assembly as shown in Browning for applying heat and vacuum to a composit3e product with a thermostat in order to control the temperature of the heat applied as is well known and exemplified by Leobon.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Slaughter, Jr. (US Patent No. 5,462,702) in view of McBroom (EP 0839635).

Slaughter discloses a method of treating a glassfibre reinforced boat hull having an exterior surface (column 2, line 33) by removing gel coat from the exterior surface (when the boat hull is damaged and when preparing the surface for example sanding), repairing the underlying glassfibre composite material (column 2, lines 51-63, column 4, lines 37-45; the surface is repaired in a conventional manner which includes rebuilding the fiberglass layers), and applying a layer of gel coat to the exterior surface from which the gel coat was removed (column 5, lines 5-17).

It is well known in the composite repair art to remove damaged portions of a composite product, add repair material to the damaged area, treat the surface of the repair material on the product with heat and vacuum to cure the damaged area. One example of such a repair of composite materials is shown by McBroom (fiber reinforces plastic composite; column 1, lines 1-45). McBroom discloses positioning a layer of gas permeable material in contact with a portion of the exterior surface of the composite (porous breather cloth 32, perforated non-stick bleed film 33, protective film and patch with apertures), positioning a layer of impermeable material adjacent the layer of gas permeable material in a manner such that the layer of gas permeable material is positioned in a space between the layer of impermeable material and the portion of the surface of the composite (sheet of airtight material/vacuum bag 29; see figures), securing the layer of impermeable material to the surface of the hull circumferentially around the space occupied by the layer of gas permeable material in a manner such

that gas and vapor can be evacuated from the space (a bead of gummy6 adhesive, column 8, lines 13-15), applying heat within the space occupied by the layer of gas permeable material (column 1, lines 40-45), removing gas and vapor from the composite by creating a partial vacuum by reducing pressure within the space occupied by the layer of gas permeable material (column 8, lines 24-50), and then removing the layers of gas permeable and impermeable material from the hull (the layers are removed after repair). It would have been obvious to one of ordinary skill in the art at the time of the invention to repair a boat hull of a composite material and gel coat as disclosed by Slaughter by providing a vacuum and heat treatment to the surface as is well known in the art of repairing composite materials and exemplified by McBroom, only the expected results would be attained.

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art in view of Scola (US Patent No. 4,007,245) as taken with Hale (US Patent No. 6,017,484).

The Admitted Prior Art discloses it is known to treat or repair boat hulls that have water damage with an exterior surface formed of glass fiber and polyester resin composites by removing any damaged portion and affected gel coat areas form the exterior of the hull, allowing to thoroughly dry, and then replacing with a new gel coat by applying a layer of gel coat to the exterior surface of the hull from which the gel coat has been removed (Specification page 1, line 1 to page 2, line 18).

Scola discloses it is known in the composite art to strengthen and repair fiber/resin composite materials, particularly of glass fiber (column 1, lines 15-26), after

degradation caused by water and other polar compounds (column 2, lines 20-30) by treating the composite by a method of heating in a vacuum system in order to improve the shear strength of the composite article (column 1-11; column 8, lines 29-34).

Scola discloses that the method is practiced by applying heat and vacuum but does not specifically recite the particulars of the apparatus used to apply the heat and vacuum. It is known in the composite art, as exemplified by Hale, to apply heat and vacuum to composite parts by positioning a layer of gas permeable material (release film 29, breather material 26) in contact with a portion of the exterior surface of the part, positioning a layer of impermeable material (vacuum bag 30) adjacent the layer of gas permeable material with the gas permeable material in a space between the part and the impermeable material, securing the impermeable material to the surface of the part circumferentially around the gas permeable material (for repair of parts larger than the equipment the bag will be secured to the part; column 5, lines 3-5; column 14, lines 13-16), applying heat to the space (oven, heaters 18, 19), removing gas and vapor in the space with a vacuum (column 5, lines 5-10), and removing the layers of gas permeable and impermeable material from the part (column 4, line 53 to column 6, line 43). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of repairing a boat hull as disclosed by the Admitted Prior Art with heat and vacuum in order to remove unwanted materials and strengthen the composite as shown by Scola by using a well known tool in order to apply the heat and vacuum as exemplified by Hale for repairs of composite parts, particularly boats.

Response to Arguments

17. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that Applicant argues on page 7 that the method of repair in McBroom pertains to repairing holes in composites while the aim of Applicant's invention does not pertain to the repair of a physical hole, but to the chemical repair of the fiberglass structure. Applicant further argues that McBroom does not pertain to removing gas and vapor from a hull and thus there is no suggestion to combine the prior art to the teachings in McBroom. The claims as currently written do require a chemical repair of fiberglass structure without the repair of a hole as Applicant argues. The claims do not exclude the steps of repair as disclosed in McBroom, nor the obvious combinations of steps of one of ordinary skill in the art repairing the Hull as shown by Slaughter by the method steps in McBroom. The repair in McBroom is exemplary of well known repair techniques in the composite art and one of ordinary skill in the art would be motivated to repair composite boat hulls as disclosed in Slaughter by the well known methods as exemplified by McBroom.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gladys J Piazza Corcoran whose telephone number is (703) 305-1271. The examiner can normally be reached on M-F 8am-5:30pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gladys J Piazza Corcoran
Examiner
Art Unit 1733

GJPC
January 22, 2003